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them. Such use is universal in Europe, and the proposition of the new nomenclature by Mr. King, is scarcely more defensible than the proceedings of Powell. But the conclusion was not yet reached. Professor Marsh coolly putting aside all this work of his predecessors, *re-names the entire series* from the period of the beginning of vertebrate life to the present time. He selects names from characteristic genera of fossils, in itself a good basis of nomenclature, but, in this case, utterly uncalled for.

We may soon look back on this stage of our scientific development as presenting some characteristics of the beginning of the century in Europe. The necessities of progress will doubtless early correct any tendency to neglect or ignore just claims wherever found.

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RECENT LITERATURE.

ZITTELL'S HAND-BOOK OF PALÆONTOLOGY.¹—While the recent death of Professor Schimper was a great loss to science, it must also prove a serious blow to Professor Zittell, who was aided by the learned fossil botanist in the preparation of the botanical portion of his Palæontology. The part before us is much thinner than the first, and although no intimation is given by the publishers, we suppose that this is the last part which will appear from the pen of Professor Schimper, and that some one else will carry on the botanical part of the work.

This second part completes the ferns and Rhizocarpeæ, and contains the account of the Calamariæ, Lycopodiaceæ, and the Phanerogameæ, including the Cycadeaceæ, the part completing the account of this first order of Cycads. It will thus be seen that the author before his death had elaborated the larger tree-like Cryptogams of the coal period, so that this part is of special interest and value to students, and especially teachers. The account of Calamites and its allies is preceded by a general account of the living Equisetaceæ, and figures with which may be advantageously compared those illustrating the restoration of Calamites; so that we obtain a tolerably clear notion of the appearance of these gigantic fossil horsetails of the coal period. Under the head of Calamocladus, the branches and whorled leaves of the Calamites, originally described under the name of Astero-phyllites, are figured and described. Antennularia is next described; then Asterophyllum as restricted by Schimper, and other forms, as well as details of fructification which are doubtfully regarded as parts of different species of Calamites, but allowed to stand under various generic names.

The giant club-mosses, Lepidodendron, Sigillaria, etc., are then

¹ *Handbuch der Palæontology*, unter mitwirkung von W. PH. SCHIMPER, herausgegeben von KARL A. ZITTELL. II. Band II. Lieferung. Mit 49 original-holzschnitten. München und Leipzig, 1880. 8vo, pp. 153-232.

treated in the same comparative and suggestive way, with excellent figures, showing the restoration of these forms from Zittel's work, "Aus der Urzeit," together with figures of allied forms, and drawings illustrating their histology. The table on page 209, giving a comparative sketch of the morphological and anatomical characteristics of Sigillaria, Lepidodendron, Isoëtes and the Cycadeæ, summarizes these points in a graphic manner.

It should be borne in mind that this work is the result of extensive personal research by the authors in collecting materials expressly for the results here given, and is not merely a compilation; thus the treatise is fresh, authentic, and therefore indispensable to those only familiar with the general popular works of Nicholson, and the older works of Owen, Pictet, and the palæontological portions of Lyell, Dana and other geological authors.

GÜNTHER'S INTRODUCTION TO THE STUDY OF FISHES.¹—No living man has so large an acquaintance with the species of recent fishes as Dr. Günther, and his works on Ichthyology are a *sine qua non* of every zoologist's library. The author of these is not more distinguished for his wide learning in this and other fields, than for his conscientiousness in certain points of nomenclature. While sustaining the law of priority in specific and generic names, he has always done so with the condition that those names should represent something in order to become available. For *nomina nuda* he has had no respect, and he has been one of the most stalwart of those who have doubtless prevented the natural sciences from being buried beneath a load of nomenclatorial rubbish. The naturalists of the future will scarcely know the debt they owe to those who have taken this logical position, and will hardly credit the assertion that there was once a period in the history of their science when persons sought to be esteemed scientific, by the mere creation and proposal of names. Dr. Günther and his co-workers have had to take care, that the popular recognition usually accorded to name-makers, shall not affect the virtue of the true scientist; and that the coin of their science shall consist of golden ideas, and not of empty words.

The portion of this work devoted to the anatomy of fishes covers 192 pages, and is very full and well illustrated. It forms the best manual of the subject in existence. A short chapter on the geological distribution of fishes follows, which is of little value. The section treating of the geographical and hypsometrical distribution is extensive and valuable. Here will be found an account of the deep-sea fishes, etc., a most interesting subject, to which Dr. Günther has contributed more than all other ichthyologists combined. The systematic portion occupies the remainder of the book. Here can be found extensive reference to

¹ An Introduction to the Study of Fishes, by Albert Günther, Keeper of the Zoölogical Department of the British Museum. 8vo. Edinburgh, Adam and Charles Black. 1880. pp. 720.